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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/616,542	07/10/2003	William D. Buchanan	AVI 1010-02US	2814
28327	7590	03/07/2006	EXAMINER	
THE LAW OFFICE OF JOHN A. GRIECCI 703 PIER AVE., SUITE B #657 HERMOSA BEACH, CA 90254				SQUIRES, BRETT S
		ART UNIT		PAPER NUMBER
		2836		

DATE MAILED: 03/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/616,542	BUCHANAN ET AL.
	Examiner	Art Unit
	Brett S. Squires	2836

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 14 December 2005.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-44 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____

Priority

1. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under the written description requirement 35 U.S.C. 112 2nd paragraph for claims 2-8,12,17, and 38-39 of this application. The examiner can find no mention in the provisional application 60/212,066 of summing the secondary power port power ratings to establish an aggregate output power rating that exceeds a designated power limit and a system controller circuit configured to regulate the power distributed by at least one secondary power port of the plurality of secondary power ports such that when the sum of the power ratings of the secondary power ports simultaneously used to charge batteries exceeds the designated power limit, the power received from the power source does not exceed the designated power limit. As further evidence that the above stated limitations of the present non-provisional application are not supported by the provisional application serial number 60/212,066, the examiner would like to point out that the provisional application claims "a poly-phase utility port for connecting the system with a utility," "a DC-DC converter or a multiplicity of DC-DC converters residing in modules containing DC-ports for connection to electric powered vehicles," and "a system controller for allocating the power to the available modules to maintain the maximum summation of power to be no greater than the utility rating."

The examiner notes that claims 1,9-11,13-16,18-37, and 40-44 are supported by the provisional application 60/212,066 because they merely require "the sum of the secondary power ports power ratings establishes an aggregate power rating that **can**

exceed a designated power limit," or "if the sum of the power ratings of the secondary power ports used to charge the plurality of batteries exceeds the maximum power level." These are not positive limitations and they only require that ability for the aggregate power rating to exceed a designated power limit.

The examiner acknowledges that the applicant states in the background section of the provisional application that "The addition of these new circuits to the system requires that all name plate ratings of charging circuit breakers (CB2 to CB6) be added up to establish a new current value that the rating of the system wiring or of the system circuit breaker (CB1) **cannot exceed.**" as a problem of prior charging systems. However the applicant never discloses summing the secondary power port power ratings to establish an aggregate output power rating that exceeds a designated power limit, instead the applicant discloses managing the load allocated to each of the charging systems' connection ports to maintain a current level below that required by the circuit breakers and other electrical system components upstream from the charging system. The applicant then argues that it is inherent in the above underlined statement that the sum of the charging system nameplate power ratings exceeds the utility nameplate power rating.

In response to this argument the examiner would like to first point out that for the sum of the charging system nameplate power ratings to exceed the utility nameplate power rating to be inherent there must be only one possible *interpretation* of the above underlined statement. The examiner would like to now point out that managing the power supplied to loads is commonly used for protection against faults such as short

circuits, and thus there is more than one possible interpretation of the above underlined statement. The examiner would like finally point out that is it not inherent that the sum of the charging system nameplate power ratings exceeds the utility nameplate power rating because there is more one possible interpretation of the above underlined statement, and thus the requirement for inherency is not satisfied.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 28 and 41 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 28 recites the limitation "the system controller and the module controller for the first charging module communicate to determine the operation of the crossover switch and the first and second connecting switches" in page 7 lines 2-5 of amendment submitted on December 14, 2005. There is insufficient antecedent basis for "the first and second connecting switches" in the claim and for examination purposes claim 28 will be treated as if it depended from claim 26.

5. Claim 41 recites the limitation "the system controller is configured to operate the secondary power port bidirectionally" in page 11 lines 1-2 of amendment submitted on

December 14, 2005. Claim 41 depends from claim 40 which recites “a first secondary power port” and “a second secondary power port” it is unclear whether the applicant is referring to the first secondary power port or the second secondary power port.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-6, 13, 18, 20, 22, 23-25, 29, 33-35, and 43-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Henze (US 5,926,004).

Henze discloses a method and apparatus for charging one or more electric vehicles having a primary power port configured to receive power from the power source (“Utility Interface” figure 1 ref# 12 and figures 4-7 ref# 152), a plurality of secondary power ports (“Power Couplers” figures 4-7 ref# 160A-160D) configured to distribute power from the primary power port to the plurality of batteries (col. 2 lines 51-67, col. 3 lines 1-19, and col. 6 lines 6-65), each secondary power port being characterized by a power rating (“Power Couplers” figures 4-7 ref# 160A-160D), wherein the sum of the secondary power port power rating establishes an aggregate output power rating and wherein the aggregate output power rating can exceed a designated power limit (col. 7 lines 7-62 [The examiner would like to point out that the sum of the power coupler power ratings is 87.5KW and the maximum power the electric

vehicle charging system can output is 50KW.]), and a system controller circuit (“Controller” figures 4-7 ref# 159) configured to regulate the power distributed by at least one secondary power port of the plurality of secondary power ports such that if the sum of the power ratings of the secondary power ports simultaneously used to charge batteries exceeds the designed power limit the power received from the power source does not exceed the designated power limit (figures 5,7, col. 6 lines 40-56 and col. 7 lines 7-62 [The examiner would like to point out that in figure 5 the sum of the power ratings of the secondary power ports simultaneously used to charge batteries is 87.5KW and power received from the power source does not exceed the 50KW limit. The examiner would like to further point out that in figure 7 the sum of the power rating of the secondary power ports simultaneously used to charge batteries is 75KW and the power received from the power source does not exceed the 50KW limit.]).

Regarding Claim 3:

Henze discloses the charging system receives power-source power only through the primary power port (“Utility Interface” figure 1 ref# 12, figures 4-7 ref# 152, col. 3 lines 40-67, and col. 4 lines 1-36), the primary power port is characterized by a power rating (col. 7 lines 7-62 [The utility interface is limited to drawing 50KW.]), the designated power limit equal the primary power port power rating and the aggregate output power rating exceeds the primary power port power rating (figures 5,7, col. 6 lines 40-56 and col. 7 lines 7-62 [The examiner would like to point out that in figure 5 the sum of the power ratings of the secondary power ports simultaneously used to charge

batteries is 87.5KW and power received from the power source does not exceed the 50KW limit. The examiner would like to further point out that in figure 7 the sum of the power rating of the secondary power ports simultaneously used to charge batteries is 75KW and the power received from the power source does not exceed the 50KW limit.]).

Regarding Claims 4-5:

Henze discloses the power source is a single-phase AC utility or a poly-phase AC utility (col. 3 lines 64-67 and col. 4 lines 1-3).

Regarding Claims 6, 13, and 23:

Henze discloses the system controller ("Controller" figures 4-7 ref# 159) is configured to transmit command signals appropriate to direct load battery controllers ("On-Board Controller" col. 2 lines 12-48) to regulate power drawn by the plurality of batteries (col. 6 lines 40-67 and col. 7 lines 1-6).

Regarding Claim 18:

Henze discloses power processor circuitry configured to convert AC power from the power source to DC wherein the secondary power ports are configured to distribute the DC power (col. 4 lines 3-36).

Regarding Claim 24:

Henze discloses a method and apparatus for charging one or more electric vehicles having a plurality of secondary power ports ("Power Couplers" figures 4-7 ref# 160A-160D), each secondary power port being configured to electrically connect to at least one of the plurality of batteries (col. 2 lines 51-67 and col. 3 lines 1-19), each secondary power port being characterized by a power rating ("Power Couplers" figures 4-7 ref# 160A-160D), a utility port configured to electrically connect to the utility and provide power from the utility to the plurality of secondary power ports ("Utility Interface" figure 1 ref# 12, figures 4-7 ref# 152, col. 3 lines 40-67, and col. 4 lines 1-36), a system controller configured to control the power distribution between the utility port and the plurality of secondary ports ("Controller" figures 4-7 ref# 159), wherein if the sum of the power ratings of the secondary power used to charge the plurality of batteries exceeds the maximum power level the system controller controls the power distribution such that the plurality of batteries are simultaneously charged using power from the utility at a power level not exceeding the maximum power level (figures 5,7, col. 6 lines 40-56 and col. 7 lines 7-62 [The examiner would like to point out that in figure 5 the sum of the power ratings of the secondary power ports simultaneously used to charge batteries is 87.5KW and power received from the power source does not exceed the 50KW limit. The examiner would like to further point out that in figure 7 the sum of the power rating of the secondary power ports simultaneously used to charge batteries is 75KW and the power received from the power source does not exceed the 50KW limit.]), a first charging module ("Power Converters" figures 4-7 ref# 158A-158D and "Power

Couplers" figures 4-7 ref# 160A-160D), wherein the plurality of secondary power ports includes a first secondary power port ("12.5KW Power Coupler" figures 4-7 ref# 160B) and a second secondary power port ("50KW Power Coupler" figures 4-7 ref# 160D) that receive power from the utility port via the first charging module (col. 3 lines 40-67, and col. 4 lines 1-36).

Henze further discloses the first charging module includes a first power converter connecting to the first secondary power port ("Power Converter" figures 4-7 ref# 158B), a second power converter connecting to the second secondary power port ("Power Converter" figures 4-7 ref# 158D), a crossover switch switchably connecting the first power converter to the second secondary power port ("Switch" figures 4-7 ref# 162B), and a module controller configured to control the operation of the crossover switch and establish the power distribution between the first and second secondary power ports ("Controller" figures 4-7 ref# 159 and col. 7 lines 7-62).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 7-8 and 40 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Matsko (US 4,351,013).

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a first primary port with a designated power limit configured to receive power from a commercial AC power utility (col. 3 lines 64-67 and col. 4 lines 1-3), a first secondary port configured to distribute power from the first primary port to charge a battery of the plurality of batteries ("Power Coupler" figures 4-7 ref# 160A), a second secondary power port configured to distribute power from the first primary port to charge a battery of the plurality of batteries ("Power Coupler" figures 4-7 ref# 160B), and a system controller configured to regulate the power level received via the first primary port ("System Controller" figure 1 ref# 40, figures 4-7 ref# 159, "Signal Line" figure 1 ref# 41, and col. 4 lines 3-47), but does not disclose a second primary power port configured to receive power from the power source.

Matsko discloses an electrical distribution system having two primary sources of electrical energy (figure 3 ref# 56,58 and col. 4 lines 25-67).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Henze to include having two primary sources of electrical energy such as that taught by Matsko in order to provide back-up power to the loads from one of the sources when the other source has faulted (Matsko col. 4 lines 25-67).

10. Claims 9-10 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Sullivan (US 4,324,987).

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a system controller configured for recharging batteries, but does not disclose the system controller is configured such that the designated power limit varies periodically.

Sullivan discloses a system and method for optimizing shed/restore operations for electrical loads having a designated power limit that varies periodically based on the time of day (col. 4 lines 25-68 and col. 5 lines 1-17).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Henze to include a power controller such as that disclosed by Sullivan in order to maintain the power consumption of the charging system as high as possible without exceeding the preselected peak power demand (Sullivan col. 2 lines 60-68).

11. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Hammer (US 4,345,162)

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a system controller configured for recharging batteries, but does not disclose the system controller is configured such that the designated power limit varies in accordance with an external signal.

Hammer discloses a method and apparatus for power load shedding in response to an external signal from the power utility company (col. 3 lines 1-36).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Henze to include a power controller that varies the designated power limit in accordance with an external signal such as that taught by Hammer in order to reduce the peak power consumption of the charging system and thus reduce the operating costs of the charging system.

12. Claims 14, 16-17, 21, 23, 36, and 38-39 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Gilbert (US 6,357,011).

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a system controller configured for recharging batteries and a plurality of power couplers, but does not disclose the system controller is configured to operate at least one secondary power port of the plurality of secondary power ports bidirectionally.

Gilbert discloses a bus-powered computer peripheral with supplement battery power to overcome the bus-power limit having a controller (figures 1-2 ref# 44) configured to operate a rechargeable battery (figures 1-2 ref# 48) bidirectionally (col. 3 lines 10-67, and col. 4 lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Henze to include configuring the system controller to operate the rechargeable batteries connected to the power couplers in a bidirectional manner such as that taught by Gilbert in order to overcome the power limits associated with the charging station (Gilbert col. 1 lines 54-67 and col. 2 lines 1-10).

Regarding Claims 22-23 and 38-39:

Gilbert discloses a voltage regulator configured to regulate power drawn by the batteries (figures 1-2 ref# 46), and a controller configured to transmit command signals appropriate to direct the voltage regulator of the batteries to regulate the power drawn by the batteries (figures 1-2 ref# 44, col. 1 lines 54-67, col. 2 lines 1-10, col. 3 lines 10-41, 65-67, and col. 4 lines 1-12).

13. Claims 15 and 37 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Gilbreth (US 2003/0007369).

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a system controller configured for recharging batteries and a plurality of power couplers, but does not disclose the system controller is configured to operate the primary power port bi-directionally.

Gilbreth discloses a power controller ("CPU" figure 2 ref# 32) that operates the power converter (figure 1 ref# 16) connected to the utility bi-directionally (page 2 paragraphs 29-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified Henze to include configuring the system controller to operate the primary power port in a bi-directional manner such as that taught by Gilbreth in order to transmit excess power from discharging batteries on to the grid and sell the power back to the utility company.

14. Claims 19, 27, and 30-32 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Hunter (US 5,724,237).

Henze discloses the above stated method and apparatus for charging one or more electric vehicles having a power supplying circuit for converting AC power into DC power (col. 4 lines 3-35), but does not disclose but does not disclose the power supplying circuit includes a DC to DC converter.

Hunter discloses a DC to DC converter for powering a load (figure 1 ref# 15,16 and abstract).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified to Henze to include a DC to DC converter such as that taught by Hunter in order to allow the electric vehicle charging apparatus to recharge batteries with differing voltages (12V, 24V, 36V, 42V), thus making the charging apparatus compatible with more electric vehicles.

Regarding Claims 31 and 32:

Henze discloses power processor circuitry configured to convert AC power from the power source to DC wherein the secondary power ports are configured to distribute the DC power (col. 4 lines 3-36).

15. Claim 26 is rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004).

Henze discloses the above method and apparatus for charging one or more electric vehicles having a first power converter ("Power Converter" figures 4-7 ref# 158B) of the first charging module connected to the first secondary power port ("Power Coupler" figures 4-7 ref# 160B) through a first connecting switch ("Switch" figures 4-7 ref# 162B) of the first charging module, a second power converter ("Power Converter" figures 4-7 ref# 158D) of the first charging module connected to the second secondary power port ("Power Coupler" figures 4-7 ref# 160D), and a module controller of the first charging module is configured to control the operation of the first connecting switch and establish distribution between the first and second secondary power port ("Controller" figures 4-7 ref# 159 and col. 7 lines 7-62), but does not disclose a second power converter of the first charging module connected to the second secondary power port through a second connecting switch of the first charging modules.

Henze discloses the claimed invention except for the second connecting switch. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included a second connecting switch, since it has been held that mere duplication of essential working parts of a device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co.*, 193 USPQ 8, *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

The motivation to add a second connecting switch is to allow all four power ports of the charging station to use 50KW power couplers rather than just one power port. This configuration allows the operator of the charging station to connect the batteries to the power couplers based on the first available power coupler rather than having to wait

for the battery on the correspondingly sized power coupler to finish charging before connecting a subsequent battery, thus using 50KW power couplers increases the speed at which the batteries can be charged.

16. Claims 41-42 are rejected under 35 U.S.C. 103(a) as being obvious over Henze (US 5,926,004) and Matsko (US 4,351,013) and Gilbreth (US 2003/0007369).

The above stated combination of Henze and Matsko discloses method and apparatus for charging one or more electric vehicles having first and second primary ports with a designated power limit configured to receive power from a commercial AC power utility, a first secondary port configured to distribute power from the first and second primary ports to charge a battery of the plurality of batteries ("Power Coupler" figures 4-7) ref# 160A), a second secondary power port configured to distribute power from the first and second primary ports to charge a battery of the plurality of batteries ("Power Coupler" figures 4-7 ref# 160B), and a system controller configured to regulate the power level received via the first and second primary ports ("System Controller" figure 1 ref# 40, figures 4-7 ref# 159, "Signal Line" figure 1 ref# 41, and col. 4 lines 3-47), but does not disclose the system controller is configured to operate the primary and secondary power ports bi-directionally.

Gilbreth discloses a power controller ("CPU" figure 2 ref# 32) that operates the power converter (figure 1 ref# 16) connected to the utility bi-directionally (page 2 paragraphs 29-33).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the above stated combination of Henze and Matsko to include configuring the system controller to operate the primary power port in a bi-directional manner such as that taught by Gilbreth in order to transmit excess power from discharging batteries on to the grid and sell the power back to the utility company.

Claim Rejections - 35 USC § 112

17. Claim 28 would be allowable if amended to depend from claim 26 to over the above stated 35 USC 112 2nd paragraph rejection and rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

18. Applicant's arguments with respect to claim 1-44 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

19. The prior art made of record and not relied upon is considered pertinent to the applicant's disclosure. Additional prior art of interest includes but is not limited to the following US Patents and Publications, Foreign Patents and Publications and Non-patent Literature: Jungreis (US 6,304,006).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brett S. Squires whose telephone number is (571)272-2268. The examiner can normally be reached on 9am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Sircus can be reached on (571)272-2800 x 36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Brett S Squires
Examiner
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